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# WHAT TO DO WITH AMERICA'S NUCLEAR DEFENSE WASTE: THE HANFORD EFFECT

JOSEPH A. COHEN\*

## I. INTRODUCTION

There are two general categories of nuclear waste: defense waste and commercial waste. Defense waste encompasses all waste produced for military purposes, while commercial waste refers to spent fuel from electricity producing power plants.<sup>1</sup> Today, the future of where both forms of waste will be disposed of, especially defense waste, is in a state of uncertainty due to the termination of the Yucca Mountain Project and the failure of the Obama Administration to propose a detailed, alternate plan.<sup>2</sup>

This Article reviews the history and background of defense waste in the United States by focusing on the Hanford Nuclear Reservation ("Hanford"), which stores ninety percent of defense waste.<sup>3</sup> It argues that the federal government must have a sense of urgency in deciding what to do with Hanford's waste. It also discusses the federal government's long history of failure in responsibly managing the back-end of the nuclear fuel cycle, the cause of which is largely political maneuvering. This Article also critiques the Obama Administration's nuclear waste policy for leaving the issue to Congress without offering a true roadmap, presents and analyzes three options for how Congress can proceed on the issue of defense waste, and discusses the significant impact Hanford would have on the viability of each option. These options are: include defense waste in plans for the

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<sup>1</sup> U.S. NUCLEAR REGULATORY COMM'N, RADIOACTIVE WASTE: PRODUCTION, STORAGE, DISPOSAL 1 (2002), available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0216/r2/br0216r2.pdf>.

<sup>2</sup> See generally U.S. DEP'T OF ENERGY, STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE (2013) [hereinafter STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL], available at <http://energy.gov/sites/prod/files/Strategy%20for%20the%20Management%20and%20Disposal%20of%20Used%20Nuclear%20Fuel%20and%20High%20Level%20Radioactive%20Waste.pdf>; Yucca Mountain 'Terminated', WORLD NUCLEAR NEWS (May 8, 2009), <http://www.world-nuclear-news.org/newsarticle.aspx?id=25183>.

<sup>3</sup> Associated Press & Herald Staff, *Blue Ribbon Commission Says U.S. Should Start Looking for Yucca Alternative*, TRI-CITY HERALD (Jan. 27, 2012) [hereinafter *US Should Start Looking for Yucca Alternative*], <http://www.tri-cityherald.com/2012/01/27/1803374/blue-ribbon-commission-says-us.html?storylink=tacoma>.

Obama Administration's proposed interim sites; build a repository solely for defense waste; or continue storing defense waste at current locations while expanding the Waste Isolation Pilot Plant ("WIPP") in New Mexico. Finally, this Article concludes that moving defense waste to interim storage facilities and expanding America's only deep geologic repository has the best chance of success.

## II. BACKGROUND

As previously stated, nuclear waste is typically split into two categories. First, "defense waste" refers to nuclear waste to which the U.S. government has title.<sup>4</sup> The term is commonly used to refer to high-level radioactive waste that is the by-product of nuclear weapons production and spent fuel from the Navy's nuclear powered warships.<sup>5</sup> The second category, "commercial waste," refers to spent nuclear fuel from electricity-generating nuclear power plants.<sup>6</sup> Overall, both types of nuclear wastes combine to create the subject matter for what is perhaps one of the greatest failures of the modern U.S. federal government: managing the back-end of the nuclear fuel cycle. As used in this Article, the phrase "back-end" refers to what is done with nuclear waste after it has been used and must be stored.

As a result of the radiation emitted by decaying unstable elements within the waste, high-level waste and spent nuclear fuel are extremely hazardous materials.<sup>7</sup> Moreover, the danger posed by the waste is a long-term concern, as the decaying process for some of the unstable elements may take hundreds of thousands of years.<sup>8</sup> Thus, the management and policies of permanent nuclear waste disposal are of paramount importance to the health and safety of the country.<sup>9</sup>

The international consensus with regard to permanent disposal of high-level waste and spent fuel is to store the waste in deep geologic repositories.<sup>10</sup> Such repositories house waste deep underground and harness

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<sup>4</sup> 50 U.S.C. § 2586(c)(1) (2013).

<sup>5</sup> STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL, *supra* note 2.

<sup>6</sup> *Disposal of Commercial Low-Level Radioactive Waste*, NUCLEAR ENERGY INST. (Apr. 2012), <http://www.nei.org/Master-Documents-Folder/Backgrounders/Fact-Sheets/Disposal-Of-Commercial-Low-Level-Radioactive-Waste>.

<sup>7</sup> BLUE RIBBON COMM'N ON AMERICA'S NUCLEAR FUTURE, REPORT TO THE SECRETARY OF ENERGY 12 (2012) [hereinafter REPORT TO THE SECRETARY OF ENERGY], *available at* [http://brc.gov/sites/default/files/documents/brc\\_finalreport\\_jan2012.pdf](http://brc.gov/sites/default/files/documents/brc_finalreport_jan2012.pdf).

<sup>8</sup> *Backgrounder on Radioactive Waste*, U.S. NUCLEAR REG. COMMISSION, <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/radwaste.html> (last updated Feb. 4, 2011).

<sup>9</sup> Megan Easley, *Standing in Nuclear Waste: Challenging the Disposal of Yucca Mountain*, 97 CORNELL L. REV. 659, 665 (2012).

<sup>10</sup> STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL, *supra* note 2, at 7.

natural rock formations (e.g., salt or granite) to act as radiation barriers.<sup>11</sup> The United States has one deep geologic repository for low-level radioactive defense waste, but does not have one for the high-level defense waste and commercial waste that constitutes the most pressing need for permanent disposal.<sup>12</sup> Moreover, after the Yucca Mountain project was terminated in 2010, the United States can no longer say it has even selected a location for a deep geologic repository.<sup>13</sup> High-level defense waste and commercial waste are currently stored on-site at their respective reactor locations across the country, with the exception of the Navy's spent fuel, which is shipped to Idaho Falls, Idaho.<sup>14</sup> There are currently sixty-five nuclear power plants in thirty-one states that store commercial waste,<sup>15</sup> but defense waste is only located in five Department of Energy ("DOE") sites: Hanford, Washington; Idaho Falls, Idaho; Savannah River, South Carolina; West Valley, New York; and Fort St. Vrain, Colorado.<sup>16</sup> In addition to the relatively low number of defense waste sites, one site, Hanford, stores ninety percent of all defense waste.<sup>17</sup>

The Hanford site is a 586 square mile nuclear reservation located in south-central Washington.<sup>18</sup> The site is 35 miles north of the Oregon border and sits along the Columbia River, 215 miles upstream from Portland, Oregon.<sup>19</sup> The site was chosen in 1943 for the Manhattan Project, and produced the plutonium for the bombs detonated over Japan at the end of World War II.<sup>20</sup> Before ending reactor operations in 1987, Hanford produced approximately seventy-four tons of plutonium for the U.S. nuclear weapons arsenal, which was about two-thirds of all U.S. government plutonium production.<sup>21</sup> A former U.S. Secretary of Energy described Hanford as "the most complex and largest nuclear project in history."<sup>22</sup> By virtue of being the largest nuclear project in history, it is also the largest nuclear cleanup project in history.

The majority of the approximately 450 billion gallons of waste produced in Hanford's nearly fifty years of production was released directly into the ground, or the Columbia River, according to disposal standards in

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<sup>11</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at 29.

<sup>12</sup> *Id.* at 95.

<sup>13</sup> *Yucca Mountain 'Terminated'*, *supra* note 2.

<sup>14</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at 19.

<sup>15</sup> Easley, *supra* note 9, at 662.

<sup>16</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at 16-17.

<sup>17</sup> *US Should Start Looking for Yucca Alternative*, *supra* note 3.

<sup>18</sup> *Hanford Overview and History*, U.S. DEP'T OF ENERGY, <http://www.hanford.gov/page.cfm/HanfordOverviewandHistory> (last updated Aug. 26, 2013).

<sup>19</sup> Noah D. Lichtenstein, *The Hanford Waste Site: A Legacy of Risk, Cost, and Inefficiency*, 44 NAT. RESOURCES J. 809, 810 (2004).

<sup>20</sup> *Hanford Overview and History*, *supra* note 18.

<sup>21</sup> Lichtenstein, *supra* note 19.

<sup>22</sup> *Letter from Secretary Steven Chu to Energy Department Employees*, ENERGY.GOV (Feb. 1, 2013, 11:00 AM), <http://energy.gov/articles/letter-secretary-steven-chu-energy-department-employees-announcing-his-decision-not-serve>.

place at the time.<sup>23</sup> This resulted in chemical and radiological contamination that exceeds current standards; approximately 270 billion gallons of ground water spread over eighty square miles beneath the site, and millions of tons of soil along the Columbia River were contaminated.<sup>24</sup> Despite its history of environmental contamination, the future of waste at Hanford is even more concerning.

### *A. A Sense of Urgency is Needed*

Hanford's most dangerous waste, fifty-six million gallons of mixed high and low-level radioactive waste, is stored in 177 aging underground tanks.<sup>25</sup> Most of these tanks were built during the Cold War in the 1940s through the 1960s, and have exceeded their designed lifespan of ten to forty years.<sup>26</sup> Moreover, 149 of the tanks were built with a single steel shell, as opposed to the more secure double shell tanks.<sup>27</sup> Over one-third of the tanks have leaked an estimated one million gallons of radioactive liquid.<sup>28</sup> While the DOE considered the tanks stabilized in 2005, the discovery of new leaks in six tanks in February 2013 and the use of unreliable data analysis by the DOE in monitoring the tanks, has renewed widespread concern over how long Hanford's aging temporary storage system can continue in its current capacity.<sup>29</sup> Since there is no available technology to plug the existing leaks, up to 1,000 gallons per year of high-level waste will continue to leak into the topsoil in the meantime.<sup>30</sup>

In addition to concern over existing leaks, the crippling of the Fukushima Daiichi Power Plant in Japan as a result of a devastating earthquake and tsunami, has raised concern over the potential effect of a natural disaster striking Hanford.<sup>31</sup> While Hanford's 177 tanks were built to protect waste from leaking in the event of an earthquake, and scientists have historically said a big earthquake in the area is highly unlikely, there are several reasons why community concerns surrounding Hanford are

<sup>23</sup> Lichtenstein, *supra* note 19, at 811-12.

<sup>24</sup> *Id.* at 812.

<sup>25</sup> *About the Project*, BECHTEL HANFORD VIT PLANT, [http://www.hanfordvitplant.com/page/the\\_project/](http://www.hanfordvitplant.com/page/the_project/) (last visited Oct. 2, 2013).

<sup>26</sup> Lichtenstein, *supra* note 19, at 812.

<sup>27</sup> Craig Welch, *6 Nuclear-Waste Tanks Leaking at Hanford*, SEATTLE TIMES (Feb. 22, 2013, 9:22 PM), [http://seattletimes.com/html/localnews/2020415477\\_hanfordleakxml.html](http://seattletimes.com/html/localnews/2020415477_hanfordleakxml.html).

<sup>28</sup> Associated Press, *Washington Gov. Inslee Says Hanford Tanks could be Leaking in Range of 1,000 Gallons Per Year*, FOXNEWS.COM (Feb. 27, 2013) [hereinafter *Hanford Tanks could be Leaking*], <http://www.foxnews.com/us/2013/02/27/washington-gov-inslee-says-hanford-tanks-could-be-leaking-in-range-1000-gallons/#ixzz2OkYyZi38>; *About the Project*, *supra* note 25; Welch, *supra* note 27.

<sup>29</sup> Welch, *supra* note 27.

<sup>30</sup> *Hanford Tanks could be Leaking*, *supra* note 28.

<sup>31</sup> Anna King, *Lessons from Japan: Is Hanford Ready to Withstand a Big Earthquake?*, SEATTLE MAG. (Aug. 2011), <http://www.seattlemag.com/article/lessons-japan-hanford-ready-withstand-big-earthquake>.

greater than ever.<sup>32</sup> First, as mentioned above, the tanks have already exceeded their intended lifespans and many have leaked even without a natural disaster. The combination of a moderately large earthquake and unreliable storage tanks is a dreadful thought to communities in the vicinity of Hanford, as well as the much larger populations in Washington and Oregon that rely on the Columbia River for potable water, fisheries, and recreation. Second, there is very little seismic data from the region around Hanford from which to base earthquake predictions.<sup>33</sup> Brian Sherrod, a U.S. Geological Survey paleoseismologist, was recently quoted by a Seattle television station as saying, “I have thought for a long time there is just a general lack of knowledge about active faults in Central Washington.”<sup>34</sup> In fact, it took the Fukushima disaster, coupled with new information from a U.S. Geological Survey that identified previously unknown connections between the Hanford area’s fault lines and those of the Puget Sound region, for the DOE to approve a new seismic analysis of Hanford.<sup>35</sup> The DOE expects to complete the study in August 2014.<sup>36</sup>

In response to the new leaks discovered at Hanford, the DOE announced on March 6, 2013, that it planned to extract and ship low-level radioactive waste from Hanford’s tanks to WIPP in New Mexico.<sup>37</sup> Having begun operations in 1999, WIPP is the nation’s only permanent geologic repository; this site also disposes of transuranic (“TRU”) defense waste, a classification of low-level radioactive waste.<sup>38</sup> WIPP is legally prohibited from disposing of high-level waste.<sup>39</sup> Currently, WIPP receives TRU defense waste that includes a mixture of plutonium contaminated scraps of machinery and clothing from DOE sites.<sup>40</sup> While removing TRU waste from Hanford would expedite waste removal from undependable tanks, the DOE has stated that only about three million gallons of Hanford’s fifty-six million gallons of tank waste can likely be categorized as TRU waste.<sup>41</sup>

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<sup>32</sup> *Id.*

<sup>33</sup> Bill Lascher, *Preparing Hanford for a Major Earthquake*, KING5.COM (May 26, 2011, 10:37 AM), <http://www.king5.com/news/quake/Part-3-Research-shakes-up-seismic-knowledge-near-Northwest-nuclear-plant-122070789.html>.

<sup>34</sup> *Id.*

<sup>35</sup> Annette Cary, *DOE Plans Seismic Analysis at Hanford*, TRI-CITY HERALD (Apr. 17, 2012), <http://www.tri-cityherald.com/2012/04/17/1906422/doe-plans-seismic-analysis-at.html>.

<sup>36</sup> *Id.*

<sup>37</sup> *DOE Announces Preference for Disposal of Hanford Transuranic Tank Waste at WIPP*, ENERGY.GOV (Mar. 6, 2013, 12:00 PM), <http://energy.gov/em/articles/doe-announces-preference-disposal-hanford-transuranic-tank-waste-wipp>.

<sup>38</sup> Christopher Helman, *Nuke Us: The Town That Wants America's Worst Atomic Waste*, FORBES (Jan. 25, 2012, 6:04 PM), <http://www.forbes.com/sites/christopherhelman/2012/01/25/nuke-us-meet-the-town-that-wants-americas-worst-nuclear-waste>; *Waste Isolation Pilot Plant*, U.S. DEP’T OF ENERGY, <http://www.wipp.energy.gov> (last visited Oct. 2, 2013).

<sup>39</sup> Helman, *supra* note 38.

<sup>40</sup> *Id.*

<sup>41</sup> *Waste Isolation Pilot Plant*, *supra* note 38.

The recognized long-term solution to Hanford's aging, leaking tanks is the nation's most expensive construction project: a \$13.4 billion vitrification plant located at Hanford.<sup>42</sup> The vitrification process stabilizes liquid waste by blending it with glass-forming materials and then allowing the mixture to solidify in steel canisters.<sup>43</sup> The process allows the radioactivity in the waste to dissipate safely over hundreds of thousands of years, making the waste environmentally safe for permanent disposal.<sup>44</sup> By placing the waste in steel canisters, the waste becomes relatively easy to ship.<sup>45</sup> With vitrified waste scheduled for production starting in the next seven years,<sup>46</sup> the decision as to where the vitrified waste will be located for permanent disposal should be taking place now. However, as America's political saga pertaining to nuclear waste has shown, lasting decisions in this arena are few and far between.

### *B. A History of Government Failure*

Meaningful congressional action over nuclear issues began with the Atomic Energy Act of 1954 ("AEA"), which gave the Atomic Energy Commission ("AEC") authority to develop military uses of nuclear energy.<sup>47</sup> The AEA also granted the AEC authority to establish regulations that are necessary for the protection of public health and property, including discretion over nuclear waste storage.<sup>48</sup> However, the AEA did not provide specific regulations or directions regarding the long-term management of the AEC's nuclear waste.<sup>49</sup>

In 1974, Congress abolished the AEC and delegated its duties to two new agencies.<sup>50</sup> The Energy Research and Development Administration ("ERDA") took over AEC's nuclear weapons program<sup>51</sup> and Congress gave the Nuclear Regulatory Commission ("NRC") AEC's regulatory authority over commercial use of nuclear energy.<sup>52</sup> Discretion over nuclear waste storage was left to the respective agencies and no specific plan for the long-term management of nuclear waste was included in the legislation.<sup>53</sup>

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<sup>42</sup> Welch, *supra* note 27.

<sup>43</sup> *About the Project*, *supra* note 25.

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> *Waste Treatment & Immobilization Plant Project*, U.S. DEP'T OF ENERGY, <http://www.hanford.gov/page.cfm/WTP> (last updated Feb. 17, 2013).

<sup>47</sup> See generally Atomic Energy Act of 1954, Pub. L. No. 83-703, 68 Stat. 919 (1954) (codified at 42 U.S.C. § 2121 (2006)).

<sup>48</sup> 42 U.S.C. § 2201 (2006).

<sup>49</sup> *Id.* § 2140(a).

<sup>50</sup> *Id.* §§ 5814, 5841-42.

<sup>51</sup> *Id.* § 5814(d).

<sup>52</sup> *Id.* § 5841(f).

<sup>53</sup> *Id.* § 5842(3).

In 1977, ERDA merged with several other agencies to become the DOE.<sup>54</sup> Thus, the DOE obtained control over all defense waste, as well as the power to create programs and facilities for storage.<sup>55</sup> Again, Congress did not mandate any specific actions be taken for the long-term management of nuclear waste.<sup>56</sup> It was not until the Nuclear Waste Policy Act of 1982 (“NWP”) that Congress passed legislation that included a plan for permanent disposal of nuclear waste, almost thirty years after passage of the AEA, and almost forty years after knowledge of the U.S. nuclear program became ubiquitous.<sup>57</sup>

Similar to the recent rise in congressional interest regarding nuclear waste following the 2011 Fukushima Daiichi disaster, the congressional action that led to the NWP was spurred by the 1979 partial core meltdown at the Three Mile Island Nuclear Generating Station in Pennsylvania, which alerted the entire nation to the dangers of nuclear waste.<sup>58</sup> Under the NWP, the U.S. government became responsible for permanent disposal of commercial spent fuel, as well as defense waste.<sup>59</sup> The NWP also determined that one or more deep geologic repositories was the best long-term strategy for managing the nation’s growing stockpiles of commercial and defense waste.<sup>60</sup>

An important component of the NWP relating to defense waste was its requirement to commingle defense waste with commercial waste under the repository program unless the president explicitly determined that a separate repository for defense waste was required.<sup>61</sup> This decision resolved four years of vigorous debate over whether defense waste should be included in the commercial repository program.<sup>62</sup> In 1985, the DOE (acting for the president) evaluated commingling defense waste with commercial waste and concluded that commingling would save \$1.5 billion compared to having separate repositories.<sup>63</sup> Except for this cost difference, the DOE found no other significant factors distinguishing commingling from having separate repositories.<sup>64</sup> President Reagan subsequently

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<sup>54</sup> Easley, *supra* note 9, at 664.

<sup>55</sup> Department of Energy Organization Act, Pub. L. No. 95-91, § 203(a)(8), 91 Stat. 565 (1977) (codified at 42 U.S.C. § 7133(a)(8) (2009)).

<sup>56</sup> 42 U.S.C. § 7133(a)(8) (2009).

<sup>57</sup> Nuclear Waste Policy Act of 1982, Pub. L. No. 97-425, § 111, 96 Stat. 2201 (1983) (codified as amended at 42 U.S.C. § 10131 (2006)).

<sup>58</sup> Easley, *supra* note 9, at 666.

<sup>59</sup> 42 U.S.C. § 10131.

<sup>60</sup> *Id.* § 10191(2)(a).

<sup>61</sup> *Id.* § 10107(b)(2).

<sup>62</sup> BLUE RIBBON COMMISSION ON AMERICA’S NUCLEAR FUTURE, DISPOSAL SUBCOMMITTEE REPORT TO THE FULL COMMISSION 16 (2012) [hereinafter DISPOSAL SUBCOMMITTEE REPORT TO THE FULL COMMISSION], available at [http://brc.gov/sites/default/files/documents/disposal\\_report\\_updated\\_final.pdf](http://brc.gov/sites/default/files/documents/disposal_report_updated_final.pdf).

<sup>63</sup> *Id.* at 7.

<sup>64</sup> *Id.*



accepted the DOE's conclusion that a defense-only repository was not required.<sup>65</sup>

The NWPA also created the Nuclear Waste Fund to finance the one or more deep geologic repositories that would be constructed.<sup>66</sup> The Fund levied a one-tenth of one cent fee for every kilowatt-hour of electricity generated on commercial nuclear power reactor owners.<sup>67</sup> In exchange, the NWPA mandated that the U.S. government take title to commercial nuclear waste as soon as a repository commenced operation and to dispose of said waste not later than January 31, 1998.<sup>68</sup> To facilitate this goal, the NWPA also set forth a "schedule for the siting, construction, and operation of repositories that will provide a reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository."<sup>69</sup> However, it soon became apparent that Congress had underestimated the politics of selecting a permanent repository and, as a result, its ambitious schedule was not met.<sup>70</sup>

After the DOE nominated nine sites for the repository in 1983, it narrowed the list to three: Hanford; Deaf Smith County, Texas; and Yucca Mountain, Nevada.<sup>71</sup> It was at this point that nuclear waste politics became extremely contentious, as the congressional delegations from Washington, Texas, and Nevada became locked in a "Not in My Backyard" struggle to prevent their state from being selected.<sup>72</sup> Congress, frustrated by lengthening delays and protectionist politics, passed the Nuclear Waste Policy Amendments Act of 1987 (NWPAA), which designated Yucca Mountain as the sole site under consideration.<sup>73</sup> Unfortunately for Nevada, the decision may have been more political than anything else.<sup>74</sup> Narrowing consideration to Yucca Mountain was not surprising given that Texas and Washington had Congressional heavyweights on their sides. The Speaker of the House was a Texas Congressman and the House Minority Leader represented a district in Washington State.<sup>75</sup>

While the selection of Nevada may have made sense from a national perspective, Nevada's reaction to the NWPAA – locally known as

<sup>65</sup> Memorandum from Ronald Reagan, President of the U.S., to John S. Harrington, Sec'y of Energy (Apr. 30, 1985) (on file with author).

<sup>66</sup> 42 U.S.C. § 10222(c)-(d) (2006).

<sup>67</sup> *Id.* § 10222(a)(1)-(2).

<sup>68</sup> *Id.* § 10222(a)(5).

<sup>69</sup> *Id.* § 10131(b)(1).

<sup>70</sup> TODD GARVEY, CONG. RESEARCH SERV., R40996, THE YUCCA MOUNTAIN LITIGATION: LIABILITY UNDER THE NUCLEAR WASTE POLICY ACT (NWPA) OF 1982 1 (2010).

<sup>71</sup> Easley, *supra* note 9, at 668.

<sup>72</sup> MARC ALLEN EISNER ET AL., CONTEMPORARY REGULATORY POLICY 261 (1st ed. 2000).

<sup>73</sup> Omnibus Budget Reconciliation Act of 1987, Pub. L. No. 100-203, § 160(a)(1), 101 Stat. 1330-228 (codified as amended at 42 U.S.C. § 10172(a) (1987)).

<sup>74</sup> EISNER ET AL., *supra* note 72.

<sup>75</sup> *Id.*

the “Screw Nevada Bill” – was over two decades of resistance.<sup>76</sup> By 1989, as a result of previous delays caused by politics and impending legal battles with Nevada, it became apparent that the federal government would not be able to fulfill its NWPAs mandated obligation to dispose of commercial waste by 1998.<sup>77</sup> Because defense waste was legally tied to commercial waste per President Reagan’s 1985 decision, the permanent disposal of defense waste would also be delayed. Seventeen years later in 2002, Congress reiterated its support of Yucca Mountain by officially approving the location as the repository site.<sup>78</sup> The congressional resolution approving the selection passed despite strong objections from Nevada.<sup>79</sup>

It was not until June 3, 2008 that the DOE finally filed its 8,600-page Yucca Mountain license application with the NRC.<sup>80</sup> Under the NWPAs, the NRC was allowed three years to review the license application and make a final determination to approve or disapprove construction of the repository.<sup>81</sup> In a dramatic turn of events, the DOE filed a motion with the NRC to withdraw its application with prejudice on March 3, 2010.<sup>82</sup> The DOE’s change of heart regarding Yucca Mountain is surprising, especially after the agency spent twenty years preparing the application and incurred \$12 billion in mining and engineering costs. However, the decision is less shocking after only a brief examination of the extremely contentious 2008 Democratic Party primary.<sup>83</sup>

Thanks in large part to the influence of the Senate Majority Leader, Harry Reid (D-Nevada), Nevada was the fourth state to vote in the Democratic Party primary.<sup>84</sup> Locked in a close fight for the highest political prize in the country, and seeking momentum early in the primary process, Democratic Party presidential candidates Barack Obama, Hillary Clinton, and John Edwards all publically opposed Yucca Mountain.<sup>85</sup> Obama specifically stated that he would “end the notion of Yucca Mountain.”<sup>86</sup>

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<sup>76</sup> Easley, *supra* note 9, at 668.

<sup>77</sup> *Id.* at 669.

<sup>78</sup> Approval of Yucca Mountain Site, Pub. L. No. 107-200, 116 Stat. 735 (2002).

<sup>79</sup> *U.S. Senate Approves Yucca Mountain Resolution*, INT’L ATOMIC ENERGY AGENCY (July 10, 2002), <http://www.iaea.org/newscenter/news/2002/yucca.shtml>.

<sup>80</sup> *DOE’s License Application for a High-Level Waste Geologic Repository at Yucca Mountain*, U.S. NUCLEAR REG. COMMISSION, <http://www.nrc.gov/waste/hlw-disposal/yucca-lic-app.html> (last updated Mar. 29, 2012).

<sup>81</sup> 42 U.S.C. § 10134(d) (2006).

<sup>82</sup> U.S. Department of Energy (High-Level Waste Repository) 71 N.R.C. 609 (2010) (order denying DOE withdrawal motion).

<sup>83</sup> Helman, *supra* note 38.

<sup>84</sup> Stacy Willis, *Making Nevada’s Caucus Count*, LAS VEGAS SUN (Dec. 26, 2007), <http://content.time.com/time/politics/article/0,8599,1698286,00.html>; *Primary Season Election Results*, N.Y. TIMES, <http://politics.nytimes.com/election-guide/2008/results/votes/index.html> (last visited Oct. 26, 2013).

<sup>85</sup> Shailagh Murray & Chris Cillizza, *The Sunday Fix: Democratic Clout Brings Early Caucus to Nevada*, WASH. POST, Nov. 4, 2007, at A2.

<sup>86</sup> Editorial, *Where Does It All Go?*, N.Y. TIMES, Dec. 20, 2008, at A26.

While Clinton got the best of Obama in the Nevada Caucus,<sup>87</sup> when Obama became president, he wasted no time in making good on his campaign promise when he assumed office. He appointed a former aide to Senator Reid as the chairman of the NRC,<sup>88</sup> and appointed a Secretary of Energy who was “unenthusiastic” about Yucca Mountain.<sup>89</sup> In essence, the DOE’s 2010 motion to withdraw the license application was the culmination of Nevada’s resistance to Yucca Mountain, as well as its growth in political might. While litigation is pending regarding whether the DOE had authority to withdraw its application under the NWPA, as a practical matter, the idea of Yucca Mountain as a permanent repository is dead in the water.<sup>90</sup> Meanwhile, the nation is left wondering whether the federal government will ever deliver on its promise to take responsibility for the back-end of the nuclear fuel cycle.

### III. THE CURRENT “PLAN”

Congress’ decision to force a repository on one state proved to be a complete failure, ending with the Obama Administration withdrawing the license application for Yucca Mountain in 2010.<sup>91</sup> It was fitting that what started with political maneuvering to select Yucca Mountain ended with political maneuvering to kill it. As a result, site selection for a repository was back at square one.

Having brushed aside twenty years of planning for Yucca Mountain, the Administration needed to provide a new path to deal with nuclear waste. However, instead of pushing an alternate location to Yucca Mountain that surely would have cost precious political capital, the Administration took the path of least resistance and formed a commission to study the matter and make recommendations.<sup>92</sup>

President Obama established the Blue Ribbon Commission on America’s Nuclear Future (“BRC”) one month before the DOE filed the motion to withdraw its license application for Yucca Mountain.<sup>93</sup> Two years later, on January 26, 2012, the BRC submitted its final report.<sup>94</sup> Co-chaired by former Congressman Lee Hamilton and Former National Security

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<sup>87</sup> *Primary Season Election Results*, *supra* note 84.

<sup>88</sup> Mary Manning, *Obama Names Ex-Reid Aide to Lead Nuclear Commission*, LAS VEGAS SUN (May 13, 2009, 1:56 PM), [http:// www.lasvegassun.com/news/2009/may/13/former-reid-aide-likely-lead-nuclear-commission/](http://www.lasvegassun.com/news/2009/may/13/former-reid-aide-likely-lead-nuclear-commission/).

<sup>89</sup> *Where Does It All Go?*, *supra* note 86.

<sup>90</sup> Rob Pavey, *NRC's Pending Lawsuits Involve Aiken County, Vogtle*, THE AUGUSTA CHRON. (Feb. 19, 2013, 9:14 AM), <http://chronicle.augusta.com/news/government/2013-02-19/nrcs-pending-lawsuits-involve-aiken-county-vogtle>.

<sup>91</sup> *Id.*

<sup>92</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at iii.

<sup>93</sup> *Id.*

<sup>94</sup> *Id.*

Adviser Brent Scowcroft,<sup>95</sup> the BRC's 158-page report made eight recommendations toward a new strategy for nuclear waste disposal in the United States, at the cost of two more years of inaction regarding nuclear waste disposal.<sup>96</sup>

Given the reasons for the Yucca Mountain plan collapsing, it was not surprising that the most important recommendation from the BRC was a "consent-based" repository selection process.<sup>97</sup> Citing the Yucca Mountain experience, the BRC stated that "[e]xperience in the United States and in other nations suggests that any attempt to force a top-down, federally mandated solution over the objections of a state or community – far from being more efficient – will take longer, cost more, and have lower odds of ultimate success."<sup>98</sup> Other key recommendations focused on the need for swift action by Congress and the executive branch.<sup>99</sup> The BRC recommended prompt efforts to develop one or more deep geologic repositories, to develop one or more consolidated interim storage facilities, and to prepare for the eventual large-scale transport of nuclear waste to the new sites.<sup>100</sup>

While the BRC report thoroughly outlined the issue of nuclear waste and offered sensible recommendations, there was a surprising lack of controversial findings or recommendations in what is an incredibly controversial subject. The BRC refused to weigh-in on the contentious reasons for why the Obama Administration terminated Yucca Mountain (per former Energy Secretary Chu's instructions that it was time to "turn the page" on that project).<sup>101</sup> Moreover, while the BRC did propose a new process to select a new permanent repository, it did not consider or propose alternative repository locations to Yucca Mountain.<sup>102</sup>

By refusing to weigh-in on controversial issues, the BRC missed a unique opportunity to give Congress and the executive branch political cover in making substantial progress toward a long-term repository. It is especially surprising that the BRC did not take such an opportunity because the report itself repeatedly outlined the need for prompt action. As a result, Congress and the executive branch were only provided with an uncontentious shell of a plan instead of a true roadmap.

One year after the BRC report's release, the Obama Administration responded to the report's recommendations in the form of the DOE's

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<sup>95</sup> *Id.* at iv.

<sup>96</sup> *Id.* at iii.

<sup>97</sup> *Id.* at vii.

<sup>98</sup> *Id.* at ix.

<sup>99</sup> *Id.* at xv.

<sup>100</sup> *Id.* at vii.

<sup>101</sup> Letter from Steven Chu, Sec'y of Energy, to Lee Hamilton & Brent Scowcroft, Co-Chairs, Blue Ribbon Comm'n on America's Nuclear Future (Feb. 11, 2011), *available at* [http://brc.gov/sites/default/files/correspondence/brc\\_letter\\_from\\_secretary\\_chu\\_2-11-2011.pdf](http://brc.gov/sites/default/files/correspondence/brc_letter_from_secretary_chu_2-11-2011.pdf).

<sup>102</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at viii.

Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste (“Administration’s Strategy”).<sup>103</sup> The fourteen-page document laid out the Administration’s policy on the issue of nuclear waste, and outlined a framework for how to move forward on developing a system to manage commercial and defense waste. The framework in the report was essentially a filtered version of the BRC’s recommendations. It highlighted the need for two interim storage facilities in addition to a deep geologic repository, and called for a consent-based approach to selecting each location.<sup>104</sup> One of the interim storage facilities, a “Pilot Interim Storage Facility,” would focus on receiving waste from shut-down commercial reactors.<sup>105</sup> The other, a larger, “Consolidated Interim Storage Facility,” would focus on satisfying the federal government’s obligation to take title to commercial waste.<sup>106</sup>

The Administration’s Strategy called for the pilot facility to begin operations by 2021, the consolidated facility to be completed by 2025, and for a repository to be available by 2048.<sup>107</sup> While the Strategy prioritized the transportation of commercial waste over defense waste to the two interim storage facilities, the strategy left open the possibility of defense waste going to the interim sites, stating that government owned waste will be “considered” for transportation to the interim sites.<sup>108</sup> For the permanent repository, the strategy endorsed the 1985 Reagan decision to commingle commercial and defense waste.<sup>109</sup>

Despite the Administration’s Strategy adding some specificity to the BRC’s recommendations, it sidestepped providing details on perhaps the most important and controversial issue pertaining to both commercial and defense waste: a roadmap for selecting one or more permanent repositories. Moving to a consent-based selection process is certainly a positive first step, but it is an obvious one after the failure of Yucca Mountain. If the Administration truly wanted to quickly move forward on the issue of finding a repository, it would have provided a detailed plan for selection that included a methodology for avoiding the profound negative reaction from potential host states that doomed Yucca Mountain. Instead, the Administration’s Strategy essentially relies on positive thinking, taking the position that a community, along with that community’s state, will make life easy for everyone and simply volunteer to host a repository. While that scenario may in fact be what occurs, the painful experience with

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<sup>103</sup> STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL, *supra* note 2.

<sup>104</sup> *Id.* at 4.

<sup>105</sup> *Id.*

<sup>106</sup> *Id.*

<sup>107</sup> *Id.* at 2.

<sup>108</sup> *Id.* at 5.

<sup>109</sup> *Id.* at 8.

Nevada proved that it is far from a certainty. The former chief of U.S. Geological Studies at Yucca Mountain, William Alley, noted that, given the power of individual states to kill any repository, even if the local community wants it, “[s]tates need a strong role in the decision-making process” of any plan.<sup>110</sup> However, according to Alley, the Administration’s “new consent-based plan barely mentions the role of states.”<sup>111</sup> In essence, the Administration’s Strategy assumes the task of finding a consenting state is inevitable instead of what it really is: an unknown.

Despite the lack of a detailed plan for finding a volunteer community for a permanent repository, the Administration’s Strategy calls on Congress to amend the NWPA to allow interim storage facilities to be built before the NRC has issued a license for constructing a permanent repository.<sup>112</sup> Such a change would be met with enthusiasm from communities that currently store commercial waste and, depending on whether defense waste was also authorized to be stored in interim facilities, communities that currently store defense waste. However, a repository plan that is not detailed, and is instead based on the wishful thinking that a volunteer community will step forward with the consent of its state, will make it difficult to find communities to volunteer for the interim facilities. Any community that desires the jobs and resources resulting from an interim facility would be extremely concerned that, should a volunteer for a permanent repository not emerge, any “interim” facility would become an “indefinite” facility. Such communities would only need to look at the example of Hanford, which is still storing nuclear waste in aging and leaking tanks long after the tanks’ expected lifespan.

In essence, after shutting down the Yucca Mountain project, the exigency of the situation pertaining to nuclear waste in America demanded more from the Obama Administration than the establishment of the BRC and a fourteen-page strategy that only provided scant details on the inevitable consent-based approach to repository selection. By choosing to spend its political capital elsewhere, and effectively punting the issue to Congress, the Obama Administration has added more uncertainty to the issue of nuclear waste disposal than was present when it came into office.

Because the Administration’s Strategy does not specify whether defense waste would be stored in the proposed interim facilities, sites that currently store defense waste, such as Hanford, cannot plan appropriately. If defense waste is actually stored in the interim facilities, then Hanford would only need short-term storage facilities for the vitrified glass canisters

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<sup>110</sup> William Alley & Rosemary Alley, *Op-Ed: States Must be Involved in Finding a Repository for Hanford’s Nuclear Waste*, SEATTLE TIMES (Mar. 9, 2013, 4:01 PM), [http://seattletimes.com/html/opinion/2020518289\\_williamrosemarialeleyopedxml.html?syndication=rss](http://seattletimes.com/html/opinion/2020518289_williamrosemarialeleyopedxml.html?syndication=rss).

<sup>111</sup> *Id.*

<sup>112</sup> *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, *supra* note 2, at 5-6.

which are expected to begin production in 2019.<sup>113</sup> However, if defense waste is not stored in the interim facilities, Hanford would need storage facilities capable of housing the canisters until at least 2048.<sup>114</sup> Moreover, based on the experience with Yucca Mountain, and the possibility that a repository host volunteer may not readily emerge, Hanford may need to store its waste long after 2048.

#### IV. THE CONSENT-BASED APPROACH AND ITS DISCONTENTS: WHY STATES PLAY A CRUCIAL ROLE IN SITE SELECTION

States react negatively to the idea of having high-level radioactive waste kept within their borders.<sup>115</sup> The aforementioned protectionist battle between Nevada, Texas, and Washington state during the 1980s, and the consistent resistance by Nevada thereafter, is evidence enough.<sup>116</sup> However, experience has also shown that local communities often do not agree with the decisions their states make. For example, Nye County, Nevada, home of Yucca Mountain, expressed its consent to be host to a permanent repository after the BRC released its report.<sup>117</sup> However, Nevada's governor immediately told the DOE that Nye County did not speak for Nevada, and that Nevada would *never* consent to the Yucca Mountain repository.<sup>118</sup> A second example involves WIPP, a rare success story in the area of nuclear waste.

Located on the remote edge of the Chihuahuan Desert near Carlsbad, New Mexico, the \$6 billion WIPP has brought prosperity to an otherwise unremarkable rural town of 25,000 people.<sup>119</sup> Carlsbad's unemployment rate is 3.8 percent, compared to 6.5 percent statewide, and the town has 1,300 more jobs as a result of WIPP.<sup>120</sup> Moreover, many of those new jobs are high-paying engineering positions.<sup>121</sup>

After the federal government started exploratory work in the 1970s due to the area's thick salt deposits, and after Congress authorized WIPP in 1979, the people of Carlsbad expressed their desire to host WIPP.<sup>122</sup>

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<sup>113</sup> Joanne Berry et al., *The Hanford Waste Feed Delivery Operations Research Model*, ENERGY SOLUTIONS (2011), <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=06147927>.

<sup>114</sup> *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, *supra* note 2, at 2.

<sup>115</sup> *States' Last-Ditch Attempts to Keep Out Nuclear Waste*, THE CHRISTIAN SCI. MONITOR, <http://www.csmonitor.com/2002/0711/p02s01-usju.html/%28page%29/2> (last visited Oct. 26, 2013).

<sup>116</sup> EISNER ET AL., *supra* note 72; Cy Ryan, *Gov. Sandoval: Nye County May Want a Nuke Dump but it Doesn't Speak for Nevada*, LAS VEGAS SUN (Mar. 12, 2012, 6:20 PM), <http://www.lasvegassun.com/news/2012/mar/12/sandoval-nye-county-may-want-nuke-dump-it-doesnt-s/#ixzz2OkoN8qhg>.

<sup>117</sup> Ryan, *supra* note 116.

<sup>118</sup> *Id.*

<sup>119</sup> Helman, *supra* note 38.

<sup>120</sup> *Id.*

<sup>121</sup> *Id.*

<sup>122</sup> *Id.*

However, New Mexico was not convinced, and it was not until 1999 that WIPP became operational under the condition that it would not receive high-level waste.<sup>123</sup> Since then, infrastructure improvements, such as roads and investments in nearby towns, have benefited the state, not just Carlsbad, and the project won support from political leaders.<sup>124</sup> To date, WIPP has received 200,000 tons of waste-filled containers.<sup>125</sup> More importantly, the facility has never had a leak.<sup>126</sup>

The WIPP experience demonstrates that local communities may be willing to host nuclear waste facilities, and that they may sometimes win over pessimistic home states. It took twenty years for Congress to authorize WIPP and for the facility to begin operations, which shows that state resistance is a challenge that must be understood and managed from the beginning of the selection process. WIPP was only accepted by New Mexico after high-level waste was strictly forbidden from the site. For the proposed interim sites and permanent repository, the DOE and Congress will not have the luxury of bargaining away high-level waste in exchange for state consent.

## V. OPTIONS FOR DEFENSE WASTE AND HANFORD'S IMPACT

The current uncertainty over nuclear waste, and defense waste in particular, has left Congress with a number of options on how to proceed. This section discusses those options and the impact Hanford would have on the viability of each option.

### *A. Option One: Include Defense Waste in Plans for One of the Administration's Proposed Interim Sites*

The first option Congress may consider is to transfer defense waste from current DOE sites to one or more of the interim facilities proposed by the Administration's Strategy, and then to a permanent repository. As previously mentioned, the Administration's Strategy proposes two interim storage facilities. The first, a Pilot Interim Storage Facility that would be operational by 2021, would focus on taking "stranded" waste from shut-down commercial power plants. The rationale for prioritizing this waste is to allow for the land and resources of old nuclear power plants to be put to better use than simply storing spent fuel, including the manpower and cost of guarding the spent fuel. In addition, according to the Administration's Strategy, prioritizing the spent fuel located at these nine power plants would

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<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

<sup>126</sup> *Id.*



allow the federal government to build and demonstrate a system for transporting and storing spent fuel.<sup>127</sup> The Administration's Strategy also states that successful execution of a transportation and storage system would demonstrate the government's commitment to its obligation to take title to commercial waste.<sup>128</sup> Essentially, it is a "crawl, walk, run" approach where the goal of the pilot facility would seemingly be to develop a successful system on a small scale that could later be expanded to fulfill the needs of the larger consolidated facility, and eventually, the permanent repository.

The second proposed interim facility, the Interim Consolidated Storage Facility, would be scheduled for completion by 2025. It would have a larger capacity than the pilot facility, and would concentrate on meeting the federal government's obligation to take title to commercial spent fuel. Thus, the rationale for the consolidated facility is to avoid long-term financial liabilities (i.e. lawsuits from commercial power plants) stemming from the government's failure to meet its obligation.

The Administration's Strategy states that defense waste will be "considered" for storage at the interim facilities.<sup>129</sup> That approach is in contrast to the BRC's recommendation to leave defense waste where it is currently located until a permanent repository is built.<sup>130</sup> The BRC found that "there appear to be no technical or safety-related reasons to move defense high-level waste and spent fuel from temporary storage at the DOE sites where these materials are now located, before final disposal capacity becomes available."<sup>131</sup> While technical and safety reasons may not be a factor for moving defense waste to an interim facility, money and politics surely will.

The BRC cites cost reduction as a key reason for its recommendation to prioritize moving commercial waste from shut down reactors to interim facilities.<sup>132</sup> The Administration's Strategy also uses this reasoning in its plan to prioritize commercial spent fuel at the proposed pilot facility. However, the same rationale for prioritizing commercial spent fuel can be used to prioritize moving defense waste to interim facilities. The BRC states that spent fuel stored at shut-down reactors cost between \$4.5 and \$8 million per year to operate and maintain.<sup>133</sup> Because there are nine shut-down reactors with stranded nuclear fuel, this means that the total cost savings per year would be between \$40.5 million and \$72 million. These

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<sup>127</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at 35.

<sup>128</sup> STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL, *supra* note 2, at 6.

<sup>129</sup> *Id.* at 5.

<sup>130</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at 19.

<sup>131</sup> *Id.*

<sup>132</sup> *Id.* at 35.

<sup>133</sup> *Id.*

savings pale in comparison to the \$1.3 billion that is spent on operations and maintenance at Hanford alone.<sup>134</sup> In addition, shut-down commercial power plants, and the locations such as Hanford that store defense waste, are inoperable, meaning that the term “stranded” waste applies as much to defense waste as it does to spent fuel at shut-down power plants. It also means that both categories of sites would benefit from being able to use waste storage space for other purposes.

The arguments for and against including defense waste in an interim storage facility may ultimately be less important than politics, which is the factor that influences nuclear waste issues the most. Currently, the NWPA does not allow an interim facility to be built before construction of a permanent repository is licensed.<sup>135</sup> Therefore, assuming a repository site is not licensed soon, which is a safe bet, Congress will need to pass legislation amending the NWPA to authorize one or more of the Administration’s proposed interim facilities. Such legislation is sure to receive vigorous debate relating to whether defense waste would be included in such facilities. As the experience in narrowing repository candidates to Yucca Mountain demonstrated in 1987, political power may decide the outcome. Due to the committee positioning of senators from Washington and Oregon – two states whose congressional delegations have vehemently attempted to speed up removal of nuclear waste from Hanford – any legislation regarding an interim facility that does not allow acceptance of defense waste will face powerful opposition.

Legislation for an amendment to the NWPA would need to be passed through the Senate Committee on Energy and Natural Resources, whose chairman is Senator Ron Wyden (D-Oregon).<sup>136</sup> Concerned about Hanford waste’s impact on the Columbia River, which he calls the “lifeblood” of the region, and that Hanford could become a de facto repository site if defense waste is included in the same repository process as commercial waste, Wyden has advocated for prioritizing the disposal of defense waste.<sup>137</sup> One of Wyden’s first actions as chairman was to tour Hanford after the leaks in six tanks were discovered in February 2013. A press release from Wyden’s office following the tour stated that, “Hanford represents an unacceptable threat to the Pacific Northwest and it’s time to

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<sup>134</sup> Shannon Dininny, *Hanford Nuclear Waste Tanks Could Explode, Agency Warns*, HUFFINGTON POST (Apr. 2, 2013, 5:11 PM), [http://www.huffingtonpost.com/2013/04/02/hanford-nuclear-waste-could-explode\\_n\\_3001134.html](http://www.huffingtonpost.com/2013/04/02/hanford-nuclear-waste-could-explode_n_3001134.html).

<sup>135</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at 41.

<sup>136</sup> *Jurisdiction*, U.S. SENATE COMMITTEE ON ENERGY & NAT. RESOURCES, <http://www.energy.senate.gov/public/index.cfm/jurisdiction> (last visited Oct. 6, 2013); *Meet Ron Wyden*, RON WYDEN SENATOR FOR OR., <http://www.wyden.senate.gov/meet-ron/biography> (last visited Oct. 6, 2013).

<sup>137</sup> *Blue Ribbon Commission Report: Hearing Before the S. Comm. on Energy & Natural Res.*, 112th Cong. 71 (2012) [hereinafter *Hearing*] (statement of Sen. Ron Wyden, Chairman, S. Comm. on Energy & Natural Res.).

move the cleanup of the radioactive waste at the site up on the list of priorities for the Senate and for the Energy and Natural Resources Committee.”<sup>138</sup> As a result of Wyden’s ascendancy to the chairmanship, and his prioritization of Hanford, an amendment to the NWPA authorizing interim storage facilities is more likely to include defense waste.

In addition, because of Wyden’s leverage as chairman, the DOE is more likely to recommend the inclusion of defense waste in interim facilities. An example of Wyden’s power may be the DOE’s decision to move Hanford’s low-level waste to WIPP following the discovery of the February 2013 leaks.<sup>139</sup> The DOE’s unprecedented decision, coming on the heels of Wyden’s tour of Hanford, seemingly represents a shift within the DOE to pay more attention to the interests of the Pacific Northwest. Indeed, WIPP had, until that point, never been authorized to receive tank waste from Hanford.

The other power player of the Washington and Oregon Congressional delegations is Senator Patty Murray (D-Washington).<sup>140</sup> Murray is the Chairman of the Senate Budget Committee, a member of the Senate leadership, and is the second-most senior Democrat on the Energy and Water Appropriations Subcommittee.<sup>141</sup> Every year, the Budget Committee proposes (and sometimes even passes) an extensive budget that makes recommendations as to where federal spending should be focused. While the Senate Appropriations Committee actually allocates funding, the annual budget sets the tone for fiscal priorities. Murray demonstrated her power by maintaining Hanford’s \$2 billion annual allowance in the 2013 budget at a time when sequestration and fiscal restraint caused dramatic reductions in the budgets of many programs.<sup>142</sup> In short, Murray has significant influence to help, harm, or kill any federal program relating to nuclear waste. If acceptance of defense waste is not included in legislation to authorize either of the interim facilities, Murray may attempt to cripple the facilities through lack of funding until defense waste is accepted. In addition, senators who are impartial to the issue, but who are seeking to curry favor with the Chairman of the Budget Committee, may get behind Murray in exchange for having their priorities funded in the annual budget.

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<sup>138</sup> *Wyden Tours Hanford, Holds Town Halls*, RON WYDEN SENATOR FOR OR. (Feb. 27, 2013), <http://www.wyden.senate.gov/news/blog/post/wyden-tours-hanford-holds-town-halls>.

<sup>139</sup> *DOE Announces Preference for Disposal of Hanford Transuranic Tank Waste at WIPP*, *supra* note 37.

<sup>140</sup> *Committee Assignments*, U.S. SEN. PATTY MURRAY WORKING FOR WASH. ST., <http://www.murray.senate.gov/public/index.cfm/committeeassignments> (last visited Oct. 6, 2013).

<sup>141</sup> Amy Harder, *Sen. Murray Keeps Hanford Nuclear Site Safe from Budget Cuts*, NAT’L J. (Apr. 8, 2013, 10:51 AM), <http://www.nationaljournal.com/daily/sen-murray-keeps-hanford-nuclear-site-safe-from-budget-cuts-20130408>.

<sup>142</sup> *Id.*

*B. Option Two: Build a Repository Solely for Defense Waste*

The second option that Congress may consider pertaining to the future of defense waste is to split the repository program into two tracks: one track for commercial waste and a separate track for defense waste. Congressional delegations from Washington and Oregon have already proposed such a plan in an effort to keep Hanford's waste from becoming tangled up in another repository process like the Yucca Mountain failure.<sup>143</sup> There are generally three main arguments for a separate, defense-only repository.

First, defense waste, and the reason it exists, is much different from commercial waste. Defense waste was produced to create nuclear weapons that, arguably, benefited the entire nation. This is in contrast to the spent nuclear fuel from power plants that was produced to benefit only localized regions of the country. Therefore, communities that supported nuclear weapons production deserve to be seen as having performed an important service for the nation as a whole, in contrast to communities surrounding nuclear power plants that performed a more localized job for the profit of corporate power plants.

Second, the vast majority of high-level defense waste cannot be used for reprocessing, meaning there is no need for a capability to retrieve it from permanent disposal.<sup>144</sup> On the other hand, spent fuel can be reprocessed, meaning it is a potentially valuable resource.<sup>145</sup> Therefore, there is a possibility of cost savings from separating the permanent disposal of defense waste from commercial waste. The United States currently does not reprocess, but the George W. Bush Administration pursued reprocessing, albeit with heavy resistance from Congress.<sup>146</sup>

The DOE's 1985 study regarding whether to commingle defense waste found that savings would come from disposing of defense waste and commercial waste in the same repository.<sup>147</sup> As a result, current law mandates commingling in a permanent repository.<sup>148</sup> However, in its 2011 report, the BRC hinted that the Administration should perform another evaluation of the issue, as there have been significant changes since

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<sup>143</sup> *Hearing, supra* note 137, at 96-97.

<sup>144</sup> STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL, *supra* note 2, at 7.

<sup>145</sup> *Processing of Used Nuclear Fuel*, WORLD NUCLEAR ASS'N, <http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Fuel-Recycling/Processing-of-Used-Nuclear-Fuel/> (last updated Sept. 2013).

<sup>146</sup> Miles A. Pomper, *Bush's Nuclear Reprocessing Plan Under Fire*, ARMS CONTROL ASS'N, [http://www.armscontrol.org/act/2008\\_07-08/BushNuclear](http://www.armscontrol.org/act/2008_07-08/BushNuclear) (last visited Oct. 26, 2013).

<sup>147</sup> DISPOSAL SUBCOMMITTEE REPORT TO THE FULL COMMISSION, *supra* note 62, at 7.

<sup>148</sup> Memorandum from Ronald Reagan, President of the U.S., to John S. Harrington, Sec'y of Energy (Apr. 30, 1985) (on file with author).

1985.<sup>149</sup> Key changes noted by the BRC include the DOE's shift from Cold War nuclear weapons production to cleanup and disposal, the success of WIPP, and current lack of statutory authority to develop a repository anywhere except Yucca Mountain.<sup>150</sup>

Third, defense waste will be in shippable form in the near future, allowing the federal government to develop experience while operating a defense-only repository, then harnessing that expertise when building and operating a larger commercial repository. With the vitrification plant at Hanford scheduled to be operational by 2019, and with a vitrification plant at the Savannah River Site already operational, defense waste will be ready for shipment to a repository as soon as a repository opens.<sup>151</sup>

While it may be sensible in an apolitical environment to construct a repository solely for defense waste, thereby separating it from the process of finding a commercial waste repository, the proposal would face stiff opposition in Congress where senators and representatives are elected at the state level. In such an "all politics is local" environment, the interests of constituents and in-state nuclear waste come first. A telling example of this took place at a hearing of the Senate Energy and Natural Resources Committee on September 12, 2012, while the Committee was discussing the future of nuclear waste. Senators Wyden and Maria Cantwell (D-Washington) had recently finished expressing interest in putting defense waste on a different repository track than commercial waste, in part to protect the Columbia River.<sup>152</sup> Senator Al Franken (D-Minnesota) was next to speak. Known for his wit, Franken first agreed that the Columbia River was an important natural resource, and then politely asked Senators Wyden and Cantwell if they had ever heard of the Mississippi River.<sup>153</sup> Franken's question was sarcastic and rhetorical, but it had the intended effect: to express Franken's disagreement that Hanford's waste should be prioritized ahead of Minnesota's commercial waste, specifically the spent fuel being stored at the Prairie Island Power Plant near the Mississippi River.<sup>154</sup>

### *C. Option Three: Continue to Store Defense Waste at Current Locations and Expand WIPP*

If Congress does not authorize defense waste for inclusion in legislation for either of the Administration's proposed interim facilities, and

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<sup>149</sup> REPORT TO THE SECRETARY OF ENERGY, *supra* note 7, at 64.

<sup>150</sup> *Id.*

<sup>151</sup> STEVE WACH, SAVANNAH RIVER NAT'L LABORATORY, FACT SHEET (2009), available at [http://srm1.doe.gov/facts/glass\\_waste\\_forms.pdf](http://srm1.doe.gov/facts/glass_waste_forms.pdf).

<sup>152</sup> *The Nuclear Waste Administration Act: Hearing on S. 3469 Before the S. Comm. on Energy & Natural Res.*, 112th Cong. 17-20 (2012) (statements of Sen. Ron Wyden, Chairman, and Sen. Maria Cantwell, Member, S. Comm. on Energy & Natural Res.).

<sup>153</sup> *Id.* at 20 (statement of Sen. Al Franken, Member, S. Comm. on Energy & Natural Res.).

<sup>154</sup> *Id.*

a repository solely for defense waste is not built, the current status quo will persist. That is, defense waste will continue to be stored at current locations until a permanent repository is constructed for commingled defense and commercial waste. As the experience with Yucca Mountain has shown, this can be a long and arduous process ending in failure. In addition, congressional delegations from Washington and Oregon have opposed the idea because they believe waiting for a commingled repository means Hanford will become a *de facto* repository.<sup>155</sup> However, there is one potential path to a repository that may take relatively less time to get licensed and has a realistic chance of avoiding the fate of Yucca Mountain.

That path involves expanding WIPP. Instead of only allowing TRU waste, this approach would allow WIPP to dispose of high level waste and spent fuel. The reason WIPP may have the best chance of being a permanent repository is political in nature: New Mexico has already benefited from WIPP in the form of federally funded roads, over \$3 billion in economic investment into the state, and most importantly, jobs.<sup>156</sup> Those benefits have all come without any leaks or spills, proving to New Mexico that WIPP can dispose of nuclear waste in a safe and reliable way.<sup>157</sup> Therefore, New Mexico, having enjoyed the benefits of radioactive waste disposal, may want to seek additional federal investment. The town of Carlsbad, which has benefitted the most from WIPP, has already begun marketing itself as the best location for a permanent repository.<sup>158</sup>

In addition to WIPP's success, the site's thick salt formations may give it advantages over other potential repository locations. Stretching from New Mexico to Kansas, the salt deposit surrounding WIPP is the largest in America, meaning the capacity of the site may be enormous.<sup>159</sup> Also, salt is seen by many as the most attractive option for nuclear waste disposal because it quickly heals cracks from seismic activity and would reduce environmental damage from leaks.<sup>160</sup> In contrast, the volcanic tuff that Yucca Mountain is made of does not heal as well and may let water seep in and radiation escape over thousands of years.<sup>161</sup> The DOE has already begun studying the salt formations around WIPP for the potential purpose of expanding the types of waste WIPP can dispose of.<sup>162</sup> These studies, the experience of operating WIPP, and a relatively educated New Mexico public on the issue of nuclear waste will save time in getting a repository application approved by the NRC should WIPP be selected.

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<sup>155</sup> *Id.* at 13, 19 (statements of Sen. Ron Wyden, Chairman, and Sen. Maria Cantwell, Member, S. Comm. on Energy & Natural Res.).

<sup>156</sup> Helman, *supra* note 38.

<sup>157</sup> *Id.*

<sup>158</sup> *Id.*

<sup>159</sup> *Id.*

<sup>160</sup> *Id.*

<sup>161</sup> *Id.*

<sup>162</sup> *Id.*

Even with WIPP's success, the seemingly ideal location for large amounts of nuclear waste, and the consent of the local community, New Mexico's political leaders will ultimately make the final decision on expanding WIPP. New Mexico Governor, Susana Martinez, tentatively supports the idea, but needs scientific confirmation that it would be safe.<sup>163</sup> Senator Tom Udall (D-New Mexico) appears less enthusiastic about the idea. Senator Udall spoke out immediately following the DOE's decision to move low-level waste from Hanford's tanks to WIPP following the February 2013 discovery of leaks at Hanford, saying that any proposal to modify the type of waste accepted at WIPP would need "strong justification and public input."<sup>164</sup> Whether it is Governor Martinez's tentative support, or Senator Udall's coolness, that would ultimately prevail in New Mexico remains to be seen, but the one thing that can be counted on is a hard-fought, internal debate over the matter.

## VI. CONCLUSION: THE OPTION THAT CONGRESS SHOULD PURSUE

All things considered, a combination of option one and option three has the best chance of success: sending defense waste to one of the proposed interim facilities and expanding WIPP. Sending defense waste to one of the two interim facilities would be in line with the Administration's Strategy because the Strategy says defense waste will be "considered" for storage at one of the facilities. In addition, sending defense waste to an interim facility but later permanently disposing of it at a repository along with commercial waste would be in line with the 1985 Reagan decision to commingle defense and commercial waste in a repository.

This combination of options would also appease the Washington and Oregon delegations who are concerned that Hanford would become a de facto repository if Congress continued to delay in selecting a repository location. This would also clear the way for Congressional legislation amending the NHPA to authorize the interim facilities. Further, assuming studies confirm WIPP's salt deposits are satisfactory for disposing of high-level waste and spent fuel, it has the best chance of passing through the state and federal political gauntlets. Moreover, if its seemingly large capacity is confirmed, it may be the only repository America needs, requiring the difficult process of selecting a repository to be done only once. Given the history of nuclear waste politics in America, this would be an achievement sure to pay dividends long into the future.

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<sup>163</sup> *Id.*

<sup>164</sup> Shannon Dininny, *Feds Look to Ship Hanford Waste to New Mexico*, YAKIMA HERALD (Mar. 7, 2013), <http://www.yakimaherald.com/news/latestnews/909537-8/feds-look-to-ship-hanford-waste-to-new>.